Cape Lookout National Seashore

Life on the Outer Banks

An Educator's Guide to Core and Shackleford Banks

Kindergarten Edition

CSWM & HC Review (Ann Kelly) 4/6/2012

Funded by a Parks as Classrooms grant from the
National Park Service

Parks as Classrooms

The National Park Service's ***Parks as Classrooms*** program is a nationwide initiative to encourage utilization of the resources of America's national parks for teaching and learning. A visit to the National Park Service's homepage (http://www.nps.gov) reveals a myriad of learning opportunities available to our nation's students and teachers. Students will discover history and explore nature within the context of a changing world; and yet, within the boundaries of many parks, the hands of time are frozen to allow them a "snapshot" of the past. ***Parks as Classrooms*** focuses on bringing learning to life through hands-on, experiential opportunities that are student-friendly, field based, and exciting and promote a sense of stewardship of park resources.

Cape Lookout's Classroom

Lying just east of the North Carolina mainland are the barrier islands that compose the famed Outer Banks. Cape Lookout National Seashore protects the southern-most sections of this barrier island chain. The park covers a 56-mile long, narrow ribbon of sand running from Ocracoke Inlet in the northeast to Beaufort Inlet in the southwest. These barrier islands consist mainly of three habitat zones: wide, bare beaches with low dunes covered by scattered grasses, flat grasslands bordered by dense vegetation, and large expanses of salt marsh alongside the sound.

Under the park's protective watch, habitats rich with a diversity of flora and fauna thrive. The waters surrounding the park are feeding grounds for marine mammals and sea turtles, while spring and fall migrations bring many different species of birds. Shackleford Banks is home to a population of wild horses whose lineage can be traced back for hundreds of years to Spanish horses. No less diverse than the animal life are the plant species which have adapted to this harsh and constantly changing environment and flourish within the constant struggle against wind and sea.

Although Core and Shackleford Banks are free of the intrusions of paved roads, resort facilities, and bridges to the mainland, vestiges of the Banks' rich human history are still clearly evident. From Portsmouth—one of the earliest trading ports in North Carolina—to the family graveyard of Shackleford Banks, students gain an understanding of the men and women who carved out a unique lifestyle along the shores of Core, Back, and Pamlico Sounds. Anchoring the entire story of human struggle along the Banks is the more than 150 year old Cape Lookout Lighthouse. Its presence denotes aspects of a lifestyle lived close to and in harmony with nature's elemental forces.

The Classroom Guide

This activity guide is one of a series to help teachers prepare their students for a visit to Cape Lookout National Seashore. Integrated within the science and social studies activities of the guide are selected narratives to give the teacher background information on this unique region of North Carolina. In addition to pre-visit, on-site and post-visit activities, the guide contains poems and songs of the region as well as alternate activities to spark a student's imagination and stimulate problem-solving skill development. Teachers are encouraged to contact the Cape Lookout National Seashore, Division of Interpretation, 131 Charles Street, Harkers Island, NC 28531 (252-728-2250) to schedule visits for their classes.

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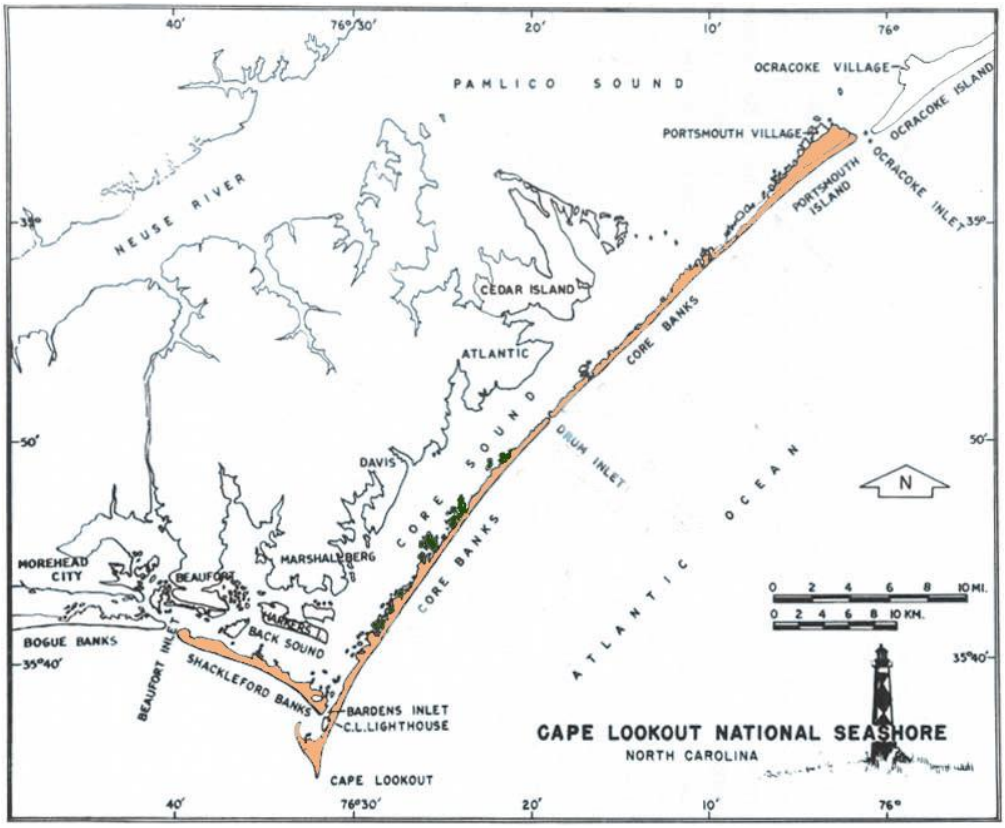


Introduction

The barrier islands of Cape Lookout National Seashore—the southern stretch of the North Carolina Outer Banks—are some of the last remaining natural, undeveloped barrier islands in the world. While these islands are constantly changing, the National Seashore consists of three main islands that are relatively stable: North Core Banks, which includes Portsmouth Village at the northern end; South Core Banks, which includes the Cape Lookout Lighthouse and Cape Lookout Village Historic District at the southern end; and Shackleford Banks, the former site of Diamond City and Wades Shore, and the current home of the Shackleford horses.

Although uninhabited today, the Cape Lookout National Seashore was home to many people over the years. These islands, also called banks because they formed a border along the coast of North Carolina, were used as temporary fishing encampments by the Coree Indians, a tribe belonging to the Algonquian family. Later, they were used by maritime communities engaged in a variety of subsistence activities such as fishing, whaling, and trading. A series of storms in the early 1900s drove many residents, often called Bankers, to the mainland.

The state of North Carolina began purchasing land in the Core Banks area in the 1950s in order to establish a park, but realized by the early 1960s that they did not have the resources to maintain the park. The U.S. Congress authorized the establishment of a national park in this area in 1966. The North Carolina government transferred its property on Core Banks to the federal government in 1974. Shackleford Banks was added in 1985 and was designated as a proposed wilderness area.

Today, the Cape Lookout National Seashore covers 56 miles of beach and over 29,000 acres of land and water—protecting the natural and cultural heritage of these islands for generations to come.

What is a Barrier Island?

Barrier islands, like those that make up the Cape Lookout National Seashore are ridges or bars of sand that form in the ocean along the coast. Barrier islands are called such because they create a barrier between the open ocean and the mainland—protecting the main coastline from wind, waves, tides, currents, hurricanes and other storms. The islands shelter the estuaries that form on the sound-side of the island.

Barrier islands form over thousands of years of geological processes, sand which consists of fine loose grains of rock, is the foundation of these islands. The sands of most the North Carolina barrier islands originate in the Appalachian Mountains and are made up of quartz and mica. As the mountains erode over time, the sediments and small rocks are carried by streams and rivers from the mountains to the ocean. Once in the ocean, these deposits accumulate forming underwater sand bars. Over time sea levels rise and fall, glaciers advance and retreat, and powerful forces of the ocean, push the sand above the sea's surface to form the barrier island ridges along the North Carolina coastline.

> "Here at the water's edge, where the land meets the sea with marsh and shoal, sandy beaches and muddy bottom, is where life begins for all coastal people."
> Karen Willis Amspacher, from *"The Spirit of the Tidewater Community"*

Life on the Outer Banks- Kindergarten Edition

Barrier Island Basics- Making Sugar Sand

Pre-Site Visit Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.P.2: Understand how objects are described based on their physical properties and how they are used.

K.P.2.1: Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

Description:

Students will observe the difference between rocks of various sizes and will discover how sand is formed from larger rocks.

Materials:

1 three to five pound rock
1 bowl of river pebbles
1 bowl of sand
1 clear jar, preferably plastic with a lid
Sugar cubes

Directions:

1. Hold up the rock, pebbles, and sand one at a time and ask the students to name each of the objects. Ask them where they have seen rocks, pebbles, and sand. Have the students hold and touch the rock, pebbles, and sand.
2. Ask the students to describe the rock, pebbles and sand. How are they alike? How are they different? Ask them to be specific about color, size, shape, and the texture of the materials.
3. Explain that they are all different sizes of the same thing, a rock. Over thousands of years the wearing down of large rocks through erosion turns a rock into sand.
4. To illustrate this process:
    a. Place the sugar cubes in the clear jar and seal the jar with the lid.
    b. Have students take turns shaking the jar until the sugar cubes break down into grains of sugar.
    c. Ask the students what happened to the sugar cubes. Discuss the process.
    d. Explain that this is what happens to rocks when they are tumbled together in rivers, over waterfalls, or by the wind.
5. Ask the students how long they think it took to make all of the sand on the beaches of Cape Lookout National Seashore. Tell them that it took many thousands of years.

Life on the Outer Banks- Kindergarten Edition

Barrier Island Basics- Traveling Sand Demonstration

On-Site Activity Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.P.2: Understand how objects are described based on their physical properties and how they are used.

K.P.2.1: Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

Description:

Students will observe the process of erosion, namely how streams wash rocks off of mountains into the ocean to form the sand of barrier islands.

Materials:

2 sand pails
Small shovel
1 watering can with a rain spout
Wet sand
Water (fresh or salt)

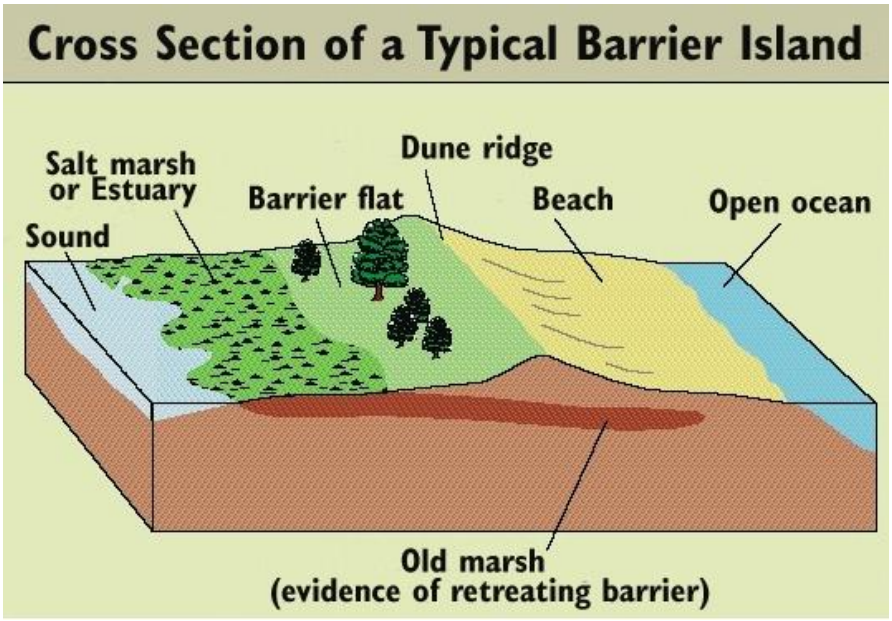
Directions:

1. Use the shovel to fill two pails with wet sand.
2. Turn the pails over on the beach and slowly remove the pails leaving the sand "mountains" behind.
3. Use your finger, to dig a channel from the top of each "mountain" to the base.
    a. Ask students what they think this channel represents. (river, stream, or creek)
4. Fill the watering can with water.
5. Slowly pour the water on top of the "mountains."
    a. Ask the students what the water represents. (rain or river water)
    b. Ask the students to describe the changes that are happening as the water moves down the "mountains." How is the water affecting the size and shape of the "mountains?"
6. Ask them what process this water and "mountain" demonstration is an example of.
    a. Erosion, or the wearing down of rocks to make sand, should be recalled along with the path that rocks take from the mountains to the ocean.

Life on the Outer Banks- Kindergarten Edition
Seashell Animals- Science Lesson

What is an Estuary?

The simplest definition of an estuary is any place where freshwater joins and mixes with saltwater. Estuaries are typically found in coastal areas where the effects from the ocean are reduced but still influential—areas like the sound side of a barrier island (see diagram below). Forces like tides, waves, and major storms play a vital role in an estuary's development. These forces also provide the energy needed to mix the fresh and salt water to distribute estuary sediments. These conditions create unique habitats for both plants and animals, and provide an environment for biological diversity. Many species of fish, shrimp, crabs, clams, and oysters are able to adapt and thrive in the brackish (mixed saltwater and freshwater) conditions of an estuary.



Introduction to Seashells

Seashells are made by two different types of animals: bivalves and univalves (also known as gastropods). Bivalves have two shells that are attached at a hinge and can open and close. Clams are a type of bivalve. Univalves have one shell with an opening on the side. Whelks are a type of univalve.

Shells found on the beach are usually unoccupied—the owner long dead—but if you find a shell that still has an animal inside, leave it on the beach. Remember that a shell is a part of an animal's body, or it may be serving as a home for another animal like a hermit crab.

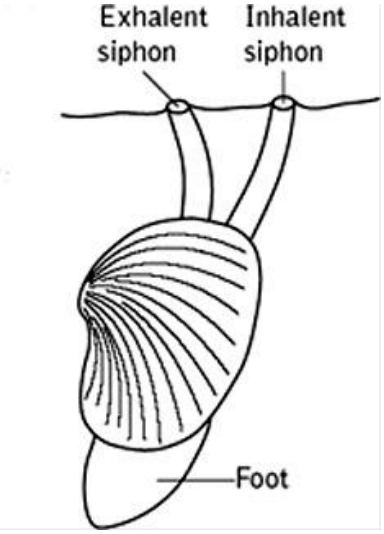
Bivalves

Bivalves (*bi* means two and *valve* means shell) are animals with two shells that belong to the phylum Mollusca. This phylum includes a variety of animals that produce many common seashells.

Cockle shells: Note the hinge at the top.

Bivalves include organisms such as clams, oysters, angel wings, scallops, coquina clams, cockles, and zebra mussels. These organisms all have two shells that are hinged together so the animal inside can open and close the shells as needed. Scallops clap their shells together "swim" in the water column.

All bivalves open and close their shells to prevent their bodies from drying out at low tide, to protect their soft bodies from predators, and to take in water and food. Bivalves also release eggs and sperm by opening their shells for external fertilization.



The animals that make shells are very simple organisms. Bivalves have a soft body with at two strong muscles that attach to the shell. These muscles allow the shells to open and help keep the shells closed. Bivalves do not have a head but they do have a mouth for feeding and gills that extract oxygen from the water (similar to a fish) for breathing.

Many bivalves have one strong "foot that resembles a tongue. This foot helps them to move and burrow. They can pull their foot back into their shell if needed.

Bivalves have two siphons for drawing water into their bodies (exhalent and inhalant siphons). These siphons act like straws, one brings water in and the other releases water back out.

The water taken in by bivalves contains oxygen for breathing and microscopic food in the form of plankton. The food is digested in the bivalve's simple stomach.

Plankton refers to the plants and animals that drift through the ocean and are not able to swim against ocean waves and currents. Plankton may consist of microscopic organisms, fish larvae, algae, or creatures as large as the jellyfish. They reside in the top layers of the ocean and sounds. They are an important food source for many marine organisms.

Quahog clam shells

Bivalve Spotlight: Oysters

Oyster shells

Oysters are one of the most common bivalves that live in North Carolina estuaries. They are one of the most common seashells found on the beach. The shells range from very small up to eight inches in length. Oyster shells are usually white or gray, however some are dark gray and others have black variations. Occasionally an orange or pink colored shell is found.

Oysters live attached to hard surfaces. They are sessile, which means that once they settle and start growing, they don't move to another location. Old empty shells are perfect places for young oysters to settle. Oysters will only settle on a location if there are already other oysters present. Sometimes they will attach to boats, docks and pilings. They are often out of the water during low tide, so they must close their shells and wait until the tide returns to keep from drying out.

Oysters are filter feeders. This means that they filter food from the water around them. They have two siphons which they use like drinking straws to suck water in and spit water out. Whatever is in the water, they take into their bodies. They eat plankton, microscopic plants and animals that are in the water, but they can't choose what they take in. (Imagine if you poured laundry soap in the water near where an oyster lives: they would have to drink it because they can't move somewhere else!)

The soft body of the oyster is visible when it is ready to eat on the half shell.

Occasionally oysters will get a foreign object (often a grain of sand) stuck between their shells. This object will irritate their soft body tissue. Oysters do not have the ability to remove these objects, so they form a coating around the grain of sand to make it smooth and more comfortable to live with. It is much like getting a sharp rock in your shoe. If you pad the rock with something smooth, it will be less irritating.

Pearl on an oyster shell

Oysters slowly lay many layers of this coating, called nacre, over the small piece of sand or irritating object. For some species of oysters, the layers of coating form a pearl. Cultured pearls occur when humans purposely insert a small piece of sand or shell into an oyster to force it to make a pearl.

Univalves

Cross section of a whelk
(marine snail)

Univalves, also known as gastropods (*gastro* means stomach, *pod* means foot), are similar to bivalves, except they only have one shell, *uni* means one. Univalves are in the phylum Mollusca. Common examples in this group are land snails, freshwater snails, marine snails, and slugs. Marine snails live in both saltwater and brackish water. Brackish water is a mixture of saltwater and freshwater. These animals often produce very strong, thick shells that can be a found in a range of shapes, sizes and colors.

Marine gastropods include whelks, lettered olives, and moon snails. These animals are born with a shell and secrete calcium carbonate (essentially limestone) to build more shell over time. The shell grows with the animal throughout its life.

Gastropods often have a conical-shaped shell that contains one large opening that allows the foot to extend out of the shell.

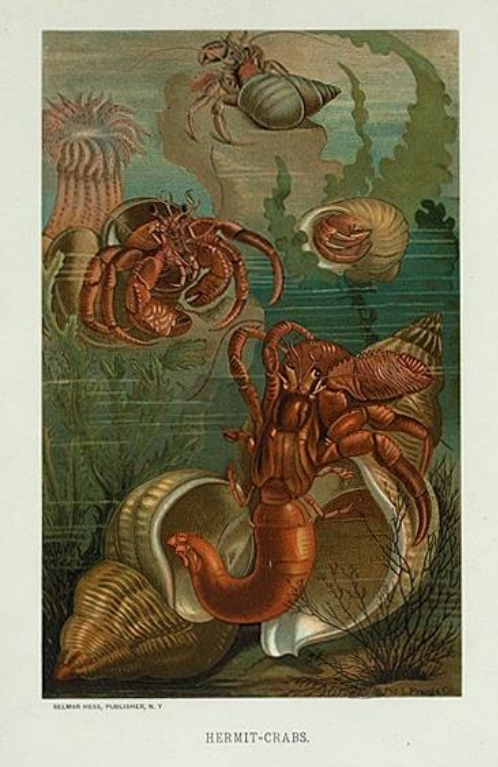
Gastropods are known for their ability to move. They can extend their foot and part of their bodies outside of their shells. Their foot leaves behind a "slime trail." Many of the snails also dig into sand or sediment to search for food or to settle in for the winter.

Like bivalves, gastropods have siphons that they extend to draw water into their gills for respiration. When they settle into the sand or sediment for the winter, they extend the siphons above the sediment in order to exchange water throughout the winter.

Univalves have a mouth and some have teeth-like parts that they use to drill holes in other shells in order to eat the animal inside.

Knobbed Whelk (*Busycon carica*)

Spotlight: **Hermit Crabs**



As hermit crabs grow they must find larger shells to accommodate their bodies.

Not all animals that live in shells are mollusks. Hermit crabs are crustaceans that are commonly found in sea shells at the beach. Crustaceans are animals that have exoskeletons, hard outer shells, which protect their soft bodies. While hermit crabs are crustaceans, they are not true crabs. True crabs make their own shells; hermit crabs wear the shells of other animals, such as univalves.

There are hundreds of different species of hermit crabs throughout the world, living both in the ocean and on land. While all hermit crabs share many similarities, land hermit crabs have much smaller gills than marine crabs, and so they require air. Land hermit crabs must be kept moist to survive, but would drown if submerged completely in water.

Did You Know?
Most hermit crabs sold as pets are land crabs from the Caribbean, but the local crabs are marine crabs.

When threatened, a hermit crab will withdraw into its shell, using its large claw to block the shell's entrance. When in motion, the crab's eyes, antennae, claws, and two sets of walking legs are visible outside of the shell.

A hermit crab is tucked inside of a tulip snail shell.

Echinoderms

Sea Star or Starfish

Animals in the phylum Echinoderma are called echinoderms, which means spiny-skinned. These marine animals are found throughout the ocean, but most adult echinoderms live in deep water environments. This group of organisms includes sand dollars, starfish, and sea urchins. These creatures are treasured by sea life and shell collectors because they are rare beach finds.

Unlike the mollusks, which make up the majority of the seashells we find on the beach, the echinoderms have very fragile shells, called tests made of calcium carbonate. These tests are not on the outside like mollusks' shells, but instead are the support system for a very soft bodied animal that lives in and around the test.

Many echinoderms have spines when they are alive which quickly fall off when the animal dies. Keyhole urchins, sometimes called keyhole sand dollars, are not actually sand dollars at all. They are actually a very flat species of urchin that has tiny spines that almost look like fur when the animal is alive.

Sea Urchin

Life on the Outer Banks- Kindergarten Edition

Seashell Animals- Shell Sorting I

Pre-Site Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.P.2.: Understand how objects are described based on their physical properties and how they are used.

K.P.2.1: Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

Description:

Students will observe and sort common shells found at Cape Lookout National Seashore and learn to distinguish between various physical features of the shells.

Materials:

A collection of shells commonly found at Cape Lookout National Seashore
Shell identification guide (see Additional Resources)
Seashell Vocabulary Page

Vocabulary:

Black	Large	Rough	Round	Seashell	Sharp
Shell	Shiny	Small	Smooth	White	

Directions:

1. Set the shells out for students to see and touch.
2. Explain to the students that shells are made by animals (snails, clams, oysters, etc.) and act as a skeleton on the outside of these animals' soft bodies. The animals that make shells are called mollusks. Some seashell animals (mollusks) have one shell (snails) and some have two shells (clams and oysters).
3. Select one shell and ask the class to describe it. Focus on the color, size, shape and the different textures of the shell.
4. As a class or in small groups, have the students sort the shells into smaller groupings using color, shape, size, and texture.
5. Have students practice writing the word "seashell" using the vocabulary page.

Questions:

- Can the shells be sorted into more than one group?
- Is there one group that has a large number of shells?
- Which group has the fewest number of shells?
- Are there any shells that belong to a group by themselves?

Extension:

- For other seashell sorting activities, contact the NC Sea Grant Educator for "Our Amazing Coast" activities www.ncseagrant.org.

Vocabulary

Name: _____ Date: _____

seashell

seashell

seashell

seashell

seashell

Life on the Outer Banks- Kindergarten Edition

Seashell Animals- Shell Sorting II

On-Site Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.P.2.: Understand how objects are described based on their physical properties and how they are used.

K.P.2.1: Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

Description:

Students will collect shells on the ocean side beach and group or categorize them by their characteristics (example: shiny, large, small, color, etc.). This activity may be led by a park ranger, naturalist, volunteer or the classroom teacher.

Materials:

Shell identification guide (see Additional Resources)
Bags or buckets for students to collect shells
Sea shells (to be collected)

Vocabulary:

Black	Large	Rough	Round	Sharp
Shell	Shiny	Small	Smooth	White

Directions:

1. Spend time on the ocean side beach in the park collecting shells.
    a. Each student should collect 10 different shells to take home.
2. Students can be encouraged to select shells with certain characteristics.
    a. Examples include a round shell, a shiny shell, a black shell, a white shell, a large shell, a small shell, etc.
3. Ask each child to pick their favorite shell. Discuss what makes this shell their favorite.
4. Select one characteristic (e.g. size) and have the class line up with their favorite shell based on this trait (e.g. smallest to largest).
    a. Alternatively, have the class sort themselves based on shell type (e.g. all oysters in a group, all clams in a group, etc.)

Questions:

- Which group is the smallest? The largest?
- Who has the smallest shell? The largest?
- Who has the most colorful shell?
- Who has the shell with the roughest texture? The smoothest?
- Who has the roundest shell? The most square? The most triangular?

Remember: Never remove a shell from the park that has a live animal in it.

Life on the Outer Banks- Kindergarten Edition

Seashell Animals- Shell Show and Tell

Post-Site Visit Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.L.1: Compare characteristics of animals that make them alike and different from other animals and nonliving things.

K.L.1.1: Compare different types of the same animal to determine individual differences within a particular type of animal.

Description:

Students will observe and make comparisons with the shells that they collected on their trip and study the animals that once made and lived in these shells.

Vocabulary:

Clam Oyster Snail

Materials:

Shell identification guide (see Additional Resources)
Shell collection from field trip
Seashell Animals Coloring Page

Directions:

1. Each student should examine the shells they collected on the field trip.
2. One at a time, have each student select their favorite shell and show it to the class. Ask them to explain why it is their favorite.
3. Assist each student in identifying the seashell animal (mollusk) that made their favorite shell (snail, clam, or oyster).
4. Provide each student with the Seashell Animals Coloring Page and have them circle the animal that made their favorite shell.

Questions:

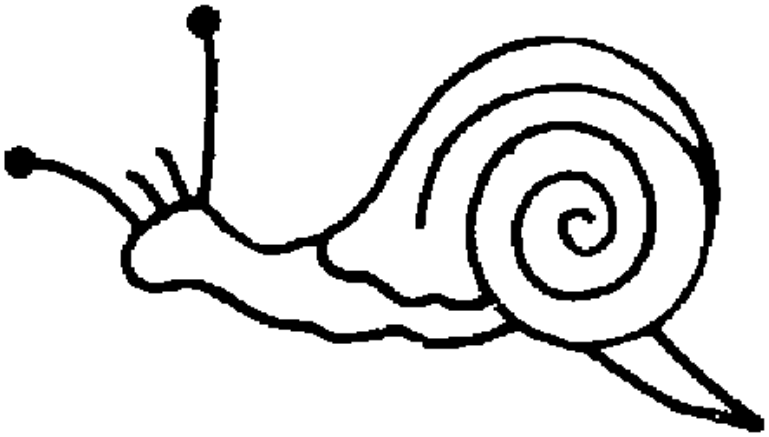
- How many students selected a snail shell as their favorite? A clam shell? An oyster shell?
- How are the snails different from clams, scallops and oysters? (Snails only have 1 shell, clams and oysters have 2. They are different shapes, colors, textures, etc.)
- How are the snail, clam, and oyster shells alike? (They are all made by an animal. They can be found on a beach. They are all hard.)
- Are all the snail shells alike or different? Explain and describe the snail shells.
- Are all the clam shells alike or different? Explain and describe the clam shells.
- Are all the oyster shells alike or different? Explain and describe the oyster shells.

Seashell Animals Coloring Page

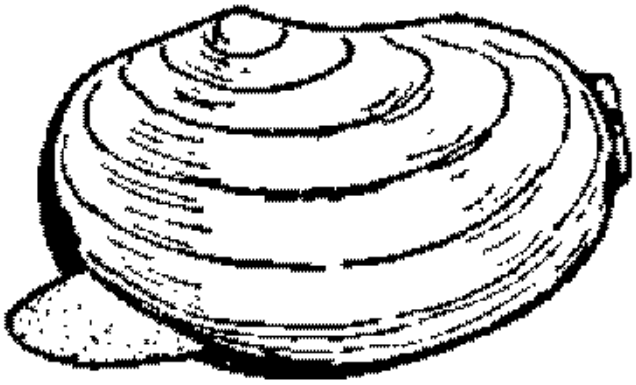
Name: _____ Date: _____

My favorite shell was made by a:
(Circle one…)

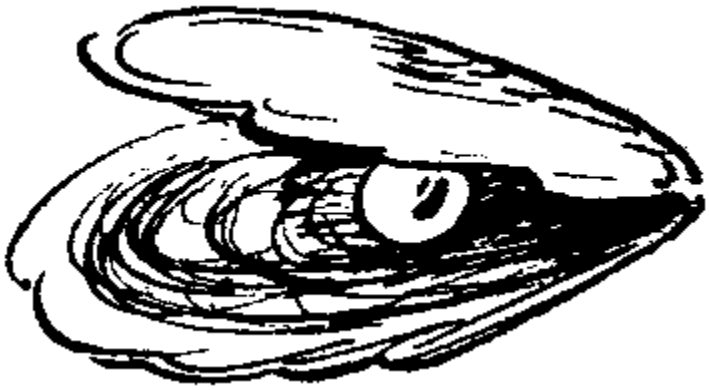
Snail



Clam



Oyster



Life on the Outer Banks- Kindergarten Edition
Seashell Animals- *A House for a Hermit Crab*
Post-Site Visit Science Activity

North Carolina Essential Standards and Clarifying Objectives
K Science

K.L.1: Compare characteristics of animals that make them alike and different from other animals and nonliving things.

K.L.1.1: Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.

K.L.1.2: Compare characteristics of living and nonliving things in terms of their: structure, growth, changes, movement, basic needs.

Reading Standards for Information Text K

Key Ideas and Details

1. With prompting and support, ask and answer questions about key details in a text.

Description:
Use the book *A House for a Hermit Crab* by Eric Carle to explore the importance of shells.

Materials:
A House for a Hermit Crab by Eric Carle

Directions:
1. Read *A House for a Hermit Crab* to the class.
2. Discuss the book using the questions below

Questions:
- What kind of house did the hermit crab live in?
    - What did the house look like? (Remember your shell vocabulary!)
- Why was the shell important for the hermit crab?
- Why do you think shells might be important for other sea animals?
- What other kinds of shell animals were in the story?
    - Did they have 2 shells or only 1 shell?
- Were there any spiny-skinned animals (echinoderms) in the story? What were they?

Life on the Outer Banks- Kindergarten Edition

Seashell Animals- Build a Bivalve

Post-Site Visit Science Activity

North Carolina Essential Standards and Clarifying Objectives

K Science

K.L.1: Compare characteristics of animals that make them alike and different from other animals and nonliving things.

K.L.1.1: Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.

K.L.1.2: Compare characteristics of living and nonliving things in terms of their: structure, growth, changes, movement, basic needs.

Description:

Students will design their own paper "oysters" by examining real oyster shells.

Materials:

Paper plates
Crayons
Cotton balls
Glue
Oyster shells (as examples)

Directions:

1. Arrange students into small groups and give each group an oyster shell to observe.
2. In their small groups have the students discuss the color, size, shape, and texture of the oyster shells.
3. Give each student a paper plate and some crayons.
4. Have the students color the bottom side of their plate so that it looks like the oyster shell.
5. Have each student fold their plate in half.
    a. Ask the students if they remember the name for an animal with two shells.
    b. Have the students point out the oyster's hinge. (The fold in the plate.)
6. Have each student glue a cotton ball somewhere in the fold to represent the pearl.

Questions:

- Who remembers the name for an animal with two shells? (oyster, bivalve)
- What do you think the cotton ball inside the oyster represents? (pearl)
- Does anyone know how pearls are formed?
    - The oyster takes something that irritates him or her and coats it with a smooth substance, making it more comfortable and turning it into something beautiful. How can we make something good from something bad?

Life on the Outer Banks- Kindergarten Edition
Seashell Animals- A Peek inside an Oyster
Post-Site Visit Science Activity

North Carolina Essential Standards and Clarifying Objectives
K Science

K.L.1: Compare characteristics of animals that make them alike and different from other animals and nonliving things.

K.L.1.1: Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.

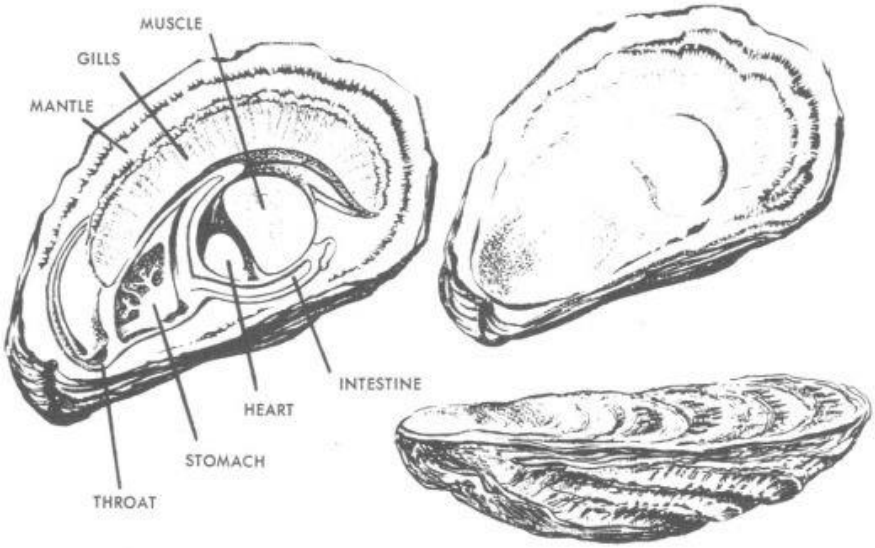
K.L.1.2: Compare characteristics of living and nonliving things in terms of their: structure, growth, changes, movement, basic needs.

Description:
Students will learn about oysters by observing a live specimen.

Materials:
Live oysters
Oyster knife (may want to open the oysters prior to the lesson)
Gloves or plastic baggies

Directions:

1. Purchase live oysters from the local seafood market.
    a. Note: Do this lesson within two days of purchase.
    b. Note: Keep the oysters cool and dry. Do not store them in water or freeze them.
2. Ask the students to describe the oyster's shell.
    a. Ask what they think might be inside.
3. Open the shell and ask the students to describe what they see. (May want to open the oyster prior to class.)
4. Using the gloves or plastic baggies to cover their hands, allow the students to touch the soft body of the oyster inside the shell.
    a. Ask them to describe what it feels like.
5. Point out the different features of oysters shown on the diagram below:



http://bits-n-pieces.hubpages.com/hub/oysters

Alternative:

1. Open the oyster prior to class time.
2. Hide a fake pearl under the fleshy part so the students can't see it.
3. Ask the students to describe what they see.
    a. Using the gloves or plastic baggies to cover their hands, allow the students to touch the animal inside the shell. Ask them to describe what it feels like.
4. After coming to the conclusion that oysters are really not very pretty animals, pull the oyster back from the shell and show them the pearl underneath.
        a. Just because something looks funny or not so nice on the outside, doesn't mean that there is not good on the inside!

Life on the Outer Banks
Social Studies Lesson- Using Shells

Early Uses of Shells: Coree Indians

Core Banks and Core Sound were named for the Coree Indians. They were the first people who lived on these banks, or islands. They did not live here all year, but only camped here during the fishing season. The Coree Indians used mollusks and their shells in many ways.

1) For Food …

The Coree Indians ate many clams, scallops and oysters and heaped their empty shells in piles called middens. So many shells were piled up on the east end of Harkers Island, it was nicknamed Shell Point. The park Service Headquarters and parking lot were built on this location. The shells were cleared away by the state to pave the first roads in the 1940s; however, the location retained its name: "Shell Point."

Plate 20

Distant View of Shell Mound on Harkers Island

Shell beads used by Native Americans for trading were known as wampum.

2) For Trading …

Indians made purple shell beads from clam shells and white shell beads from the inner part of channeled whelks. Strings of these beads, called wampum, were highly valued and were often traded as currency. The shell beads were typically strung into lengths of about six feet, containing 240 – 360 beads. White settlers realized the importance of wampum to native people and began trading with shells. Six white beads were worth one penny. The purple beads were worth twice the white beads. Wampum was distributed from the Atlantic coast to the Mississippi River.

3) As Tools …

Oyster shells with their very sharp edges have sent more people to the emergency room than sharks. The Coree Indians took advantage of the sharp edges of oyster shells to dig out the insides of their log canoes. North Carolina Indians did not have metal tools, so to cut down a tree they started fires around the base to weaken the tree until it fell under its own weight. To hollow out a tree to make their canoes, they would use fire to burn and soften the wood and then scrape out the interior with oyster shells.

Native Americans used fire and tools made of oyster shells to build wooden canoes from tree trunks.

Whelk shells (locally referred to as conchs) were valuable Indian trade objects. Whelks from the east coast have been found in ancient Indian villages in as far away as Arkansas. These shells were used as:

A. Hoes: a handle was attached through the shell, the sharp point used to break up the soil.
B. Ladles or cups to drink from. Many of these shells were used by Native Americans to drink ceremonial teas.
C. Lamps.

.

Yaupon tea stains on a whelk ladle artifact

Modern shell candle (reminiscent of shell lamps)

Life on the Outer Banks- Kindergarten Edition
Using Shells- Shell Games
On-Site Social Studies Activity

North Carolina Essential Standards and Clarifying Objectives
K Science

K.G.2: Understand the interaction between humans and the environment.
K.G.2.2: Explain ways people use environmental resources to meet basic needs and wants (shelter, food, clothing, etc.).
K.C&G.1: Understand the roles of a citizen.
K.C&G.1.1: Exemplify positive relationships through fair play and friendship.

Description:
Students will connect with the past by learning about and playing some of the games Banker children played using shells.


What do you hear when you put a shell to your ear?

Materials:
Buckets or bags
Collected shells

Tea Party Directions:

1. Have the students look for shells that remind them of cups, saucers, or dishes.
2. Hold an imaginary tea party on the beach with these shells.
3. Tell students that the children who lived on these islands may not have had the plastic tea sets that we can buy today, so they invented their own toys with natural objects they could find on the beach (like shells.)

Shell Skipping Directions:

1. Have the students look for small cockle or clam shells on the beach. Shells like these were used by children in this area as skipping stones: they would throw them across the water, trying to skip them as many times as possible.
2. Students should hold their skipping shell horizontally—curved side down—with an index finger curling around one edge. Standing with their sides facing the water, students should throw the shell so that their hands travel past their waists.
3. It will help if students release the shell with a snap of the wrist to give it a horizontal spin.
4. Their elbows should be next to their hips as the shell leaves their hands. The shell should be thrown low and parallel to the water's surface.
5. Students should count the number of times the shell skips. Who had the most?

She Sell Sea Shells
Just for Fun: Tongue Twister

This old tongue twister was composed in 1908 by Terry Sullivan to honor Mary Anning, a revered 19th Century British fossil collector. The original text was:

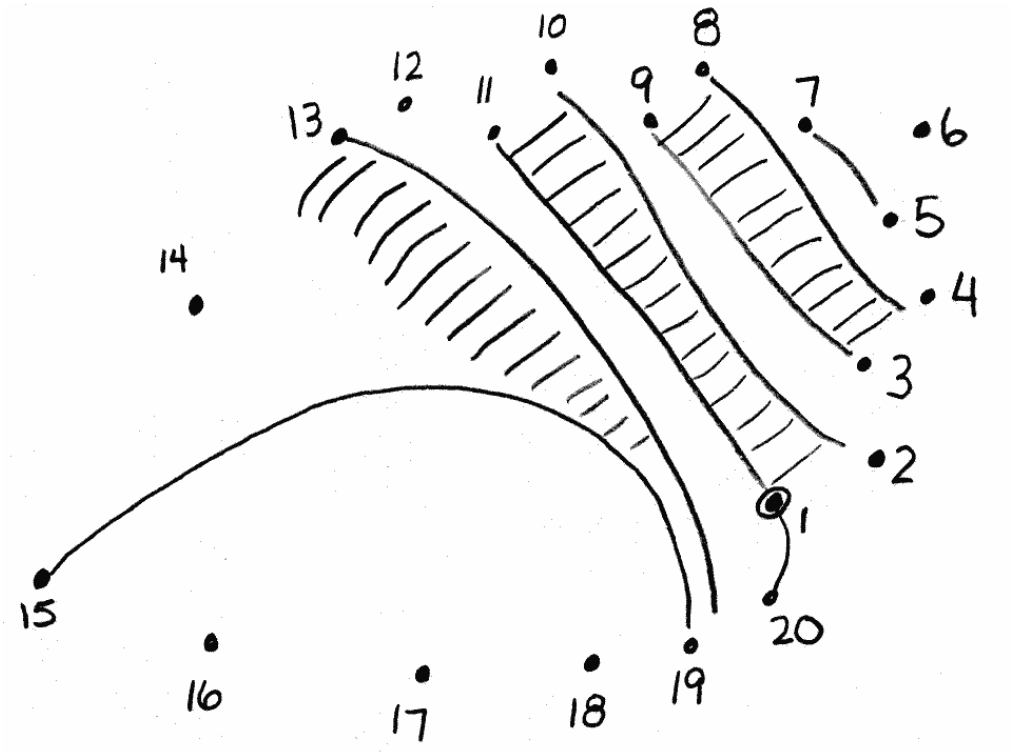
She sells seashells on the seashore
The shells she sells are seashells, I'm sure
So if she sells seashells on the seashore
Then I'm sure she sells seashore shells.

Have your students learn this tongue twister slowly and then try to repeat it faster and faster. This is a good activity while traveling on the bus for your visit to the park.

Connect the Dots

Name: _____ Date: _____

Connect the dots to uncover a beach treasure:



Life on the Outer Banks- Kindergarten Edition
Social Studies Lesson- Fishing and Whaling Communities

The Colonial Period: Natives and Settlers

The first written description of the Outer Banks was made in 1524 by an Italian explorer named Giovanni da Verrazzano. He mistakenly thought that this strip of land separated the Atlantic Ocean from the Pacific Ocean. One of the explorers with da Verrazzano encountered a group of native inhabitants who were shocked by the whiteness of his skin.

Most native settlements along these islands, called banks, were temporary hunting and fishing camps. However, one group, the Hatteask or Hatteras Indians, had a village at Cape Hatteras, now a part of Cape Hatteras National Seashore located about 20 miles north of the upper reach of Cape Lookout National Seashore. The Hatteask Indians belonged to the Croatan tribe. The Coree Indians of the Core Sound region had camps at Cape Lookout and permanent settlements on Harkers Island and surrounding mainland sites. Both the Croatans and the Corees were members of the Algonquian (or Algonkian) language family.

The Coree Indians of Core Sound and the Machapunga Indians of the Pamlico River region, both described as "bloody and barbarous people," were often at war with each other. They joined together during the Tuscarora Confederacy in 1711 in an effort to fight a common enemy: English settlers. The Confederacy launched an attack in 1713 during the Tuscarora Wars and killed or captured over forty settlers. Over the next few months, the settlers wiped out the Machapunga and Coree warriors.

The fighting between the settlers and the natives slowed the settlement process. By 1722 a large part of North Carolina's barrier islands had been granted to or claimed by noblemen, squatters, ranchers, and investors.

Populating the Banks

Sources have suggested that Cape Lookout and Shackleford Banks were inhabited by white seasonal fishermen in the mid-1700s; however it is not known when families began to live there year-round. There are reports of a settlement of four houses on Cape Lookout in 1806. There was also a settlement in the area called Diamond City located in the area now known as Barden Inlet. Records also showed settlements at Bells Woods, Wades Hammock, and in the Mullet Pond area of Shackleford Banks.

In 1753, Portsmouth Village was established by the North Carolina Assembly. Three years later, the first lots in the village were sold and, by 1810, Portsmouth Village was the second largest town on North Carolina's barrier islands. Census records showed 685 people living in Portsmouth Village in 1860.

While very little is known about the early settlers in these areas, sources suggest that some were English, Irish, Scottish, German, French, Huguenots, and Quakers. They settled here due to the abundance of resources found along the North Carolina coast.

The Estuarine Nursery

Estuaries are where part of the ocean extends inland to meet the mouth of a river. Here fresh and salt water mix to create highly productive habitats that function as good nurseries. They provide a protected place for marine animals to reproduce and grow before they migrate to the ocean to live out their adult lives. The barrier islands along the coast of North Carolina protect an extensive system of estuaries, with a surface water area of about 3,000 square miles or two million acres. This system of estuaries is the second largest in the continental United States (the Chesapeake Bay system is the first).

It was estimated that, in 1967, 80% to 90% of the Atlantic and Gulf coasts had estuaries. The percentage has drastically declined over the years due to human development and population growth along the coast.

The Importance of Estuaries

Estuaries are important features along the coast because they help control erosion and reduce flooding of the mainland. Sand bars buffer the impact of waves, while plants and shellfish beds anchor the shore against tides. Swamps and marshes take the initial impact of high winds moving in from the ocean, soak up heavy rain and storm surges, and release the extra water gradually into rivers and groundwater supplies. All of these benefits help protect people's homes from flooding.

Estuaries are also a type of environmental filter. Many of the plants and animals in estuaries filter pollutants out of the water. Particles in the water are either removed by chemical processes, by aerobic decomposition or by the feeding of estuarine animals and bacteria. Salt marsh plants trap chemicals and pathogens carried to the coast by rivers and move them into soils where they can be neutralized. Oysters, common estuary inhabitants, filter impurities out of water as they eat, collecting the contaminants in their bodies. One oyster can filter twenty to fifty gallons of water per day. Bacteria eat organic matter found in the sediment and release carbon dioxide, hydrogen sulfate, and methane into the atmosphere, preventing too much of these gases from being stored in the estuary. However, toxins can still accumulate in estuaries causing many environmental and health problems for people and wildlife.

Three quarters of the fish caught commercially in the United States live in estuaries. This means that, on average, estuaries produce more food per acre than the most productive farmland. About thirty species of fish are caught and sold in the seafood market live in North Carolina estuaries. Commercial fishing is important to the national and local economy and food supply.

Fish and wildlife

Estuaries create unusual and changeable habitats. Many plants and animals are able to adapt to the brackish (mixed saltwater and freshwater) conditions of these ecosystems. More than 150 species of fish and invertebrates live in North Carolina's estuaries. Some species use different habitats within the estuarine system during different stages of their life cycle. As in any

ecosystem, the plants and animals in an estuary are richly interconnected, and every species depends on several other species to survive.

Oysters, along with other bivalves, attach to gravel and old shells on the shoreline forming jagged oyster beds that help protect the land from erosion. Blue crabs, stone crabs, and grass shrimp hatch and grow in the oyster beds and eat the phytoplankton found there. Black sea bass, red drum, and flounder forage for food among the oysters beds. These organisms are able to survive in the estuary because this environment is protected from ocean currents.

Marsh plants provide feeding grounds and shelter for many adult fish and shellfish. Cypress, tupelo, and swamp maple trees grow in swamp forests, whereas grasses such as black needle rush and cord grasses dominate salt marshes. Freshwater marshes support cattails, bull rushes, and reeds. Many fish can also be found in this area: river herring spawn in the swamps, while adult river herring, Atlantic menhaden, and bluefish live in the open water.

Underwater plants (also known as submerged aquatic vegetation or SAV) cover about 200,000 acres of estuary beds along the coast of North Carolina—that's almost two-and-a-half times the size of Raleigh, NC. Submerged aquatic plants produce oxygen and nutrients used by animal species. Spotted sea trout, red drum, and pink shrimp spend their early lives among underwater plants, while predators such as flounder and rays hunt there. Bay scallops attach to the blades of plants. Spots, croakers, mullets, and sturgeon feed on algae and tiny animals on the soft floor of the estuary. Flounder, shrimp, and kingfish hatch there and clams and worms burrow into the mud and sand.

Migratory birds—including tundra swans, sea ducks, and snow geese—spend winter along the estuary. Egrets and herons fish in the salt marshes. Although loggerhead sea turtles hatch on the beach, estuaries are important feeding grounds for many adults.

A number of birds and animals in danger of extinction depend on North Carolina's estuaries. Threatened species living in the estuarine system include the green sea turtle, bald eagle, and piping plover. Eight wildlife refuges have been established along the North Carolina coast to protect these important estuarine resources.

Skimmer trawl collecting shrimp for market

Mullet Fishing

Of all the different fisheries important to the commercial fishing industry at Cape Lookout, the most important and productive was the mullet fishery. In 1907 a state survey proclaimed that jumping mullet was the "most important food-fish of the Beaufort waters."

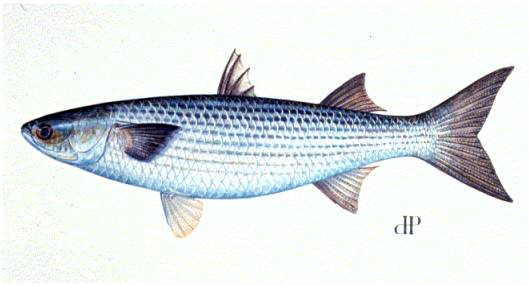


Illustration of a mullet

There was a demand in North Carolina and neighboring states for a cheap fish and mullet, "being of good quality and very abundant," filled this demand. Moreover, mullet was taken during the summer when other edible fish were scarce.

Seasonal fishing hut and fishermen

The largest mullets could be caught after the wind started blowing from the northeast, which usually happened in August. This wind was called a "Mullet Blow" and signaled fishermen to get their crews and gear together. Their gear included nets, salt and barrels for storing and shipping the fish.

Temporary fishing huts, like the one in the picture on the left, were constructed for the crews to live in until the season ended around mid-November. In 1879, the mullet fishery was virtually confined to Carteret County. There were 37 crews, each composed of 15 to 20 men.

These people were the nation's chief suppliers of mullet. So many mullet were cut up and salted on Shackleford Banks, that the freshwater pond they used was called "Mullet Pond." Such large numbers of salted and barrel-packed mullet were shipped out on trains from Beaufort that the route was called the "Mullet Line."

Mullet was so important to the community as a food fish that they nicknamed the town paper "the mullet wrapper" because it was used to wrap the fish taken home from the docks for their own family's use. It was said if it were not for salted mullets and spots (another common fish) most of Carteret County would have gone hungry during the Great Depression.

The importance of the mullet fishing industry is still remembered in a football rivalry tradition: when East Carteret and West Carteret High Schools play against each other, the winners are awarded the coveted Mullet Bucket trophy, which is full of hamburgers.

Trading Along the Banks

Early settlers of North Carolina's barrier islands were stockmen and small landholders, "poor but respectable yeoman who saw an opportunity to acquire, generally for the taking, land for a homestead" (Dunbar 1956:36).

It was common for settlers to raise livestock, like cattle and goats. The islands provided grazing land that did not require fences to keep the animals contained. Settlers lived in small neighborhoods, typically in the hammocks, or hills, on the sound side of the banks where they were afforded more protection from ocean winds and surf. They took part in subsistence fishing and traded salted fish for corn and other staples from the mainland.

Cattle on a barrier island

Salted fish were exported to England by those on the mainland of North Carolina. They also exported tobacco, grain, tar, turpentine, and other supplies for ships. At the same time, the livestock industry grew as they began exporting leather and other products.

Whaling along the Banks

The whaling industry, centered at Cape Lookout where northbound right whales in their spring migrations passed close to the coast, provided another resource for trade goods. Some of the earliest white settlements in the Core Sound region were whalers' camps along Cape Lookout and Shackleford Banks. Whale oil was exported from the Banks as early as 1660. In 1681 the Lords Proprietors gave up their exclusive rights to whales and offered a bounty for any whale caught in order to encourage the industry. The first whalers moved to Carteret County in 1725 and began a shore-based, small-boat fishery. The whalers would wait for a whale to come close enough to the shore to harpoon it and others would take boats out to secure the catch. By the end of the 1720s, whaling was a common activity in the winter and early spring.

Shore-based whaling had largely been abandoned in American communities by the early part of the nineteenth century, with the exception of North Carolina. The geographical position of the islands made this method ideal. The close proximity of these sand banks to the Gulf Stream and to the migratory routes of certain whales provided a choice opportunity for whaling.

The Way They Lived in the 1800s

Ask students to take a look around the classroom and ask them some questions.

- *When we come into a room at night what do we do?*
    - Turn on the light.
- *When we come home from grocery shopping where do we put our groceries?*
    - Shelves and refrigerator.
- *When we want a drink of water, what do we do?*
    - Turn on the faucet.

When people were living on the islands of Core Banks and Shackleford, they did not have these nice inventions and conveniences.

With no refrigerator to keep their fish cold, they salted or pickled their fish and kept them in wooden barrels so they would stay fresh longer. The salt preserved or kept the fish from rotting or going bad. There are foods that are still preserved this way: pickles for example. Pickles are preserved cucumbers. (See experiment below.)

Most of the bank homes were small houses and had no closets and very few cabinets. So if you got new socks, you would have put them in a woven basket hung from a nail in your bedroom.

With no electricity, oil lamps were used to light the lighthouse and all the houses on the banks. Oil lamps required a great deal of care. People had to light the lamps, clean them, trim their wicks, and keep them filled with fuel. Because the lamps needed a lot of attention, many folks went to bed early so they could avoid using them.

With no wells on the islands, drinking water was collected in barrels or cisterns. At the lighthouse Keepers' Quarters, rain was collected from the roof. Rain ran off the roof into gutters attached to the roof's edge and funneled into a large brick cistern beside the house. The cistern had a pump that brought the water up into the house to drink, bathe, or cook. Most homes just had a simple rain barrel.

My Mullet Jumps Over the Ocean

Just for Fun: Song to the tune of My Bonnie Lies Over the Ocean

My mullet jumps over the ocean,
My mullet jumps over the sea.
My mullet jumps over the ocean,
Oh, jump in my net just for me.

Jump In! Jump In!
Oh, jump in my net just for me, for me
Jump In! Jump In!
Oh, jump in my net just for me

Pickles and Cucumbers

Just for Fun: Experiment

North Carolina Essential Standards and Clarifying Objectives
K Science

K.C.1: Understand how individuals are similar and different.

K.C.1.2: Explain the elements of culture (how people speak, how people dress, foods they eat, etc.).

Materials:
Plastic sandwich bag
A fresh cucumber
Jar of pickles

Directions:

1. Place the cucumber in a sealed plastic bag.
2. Place a pickle in a separate sealed plastic bag.
3. Leave both bags on a window sill for a week.
4. After time has passed, have the students observe the cucumber and the pickle and ask them which one they would like to eat.

Edible Estuary

Just for Fun: Snack

Materials:
Cream cheese, softened
Blue food coloring
Melba toast or crackers
Goldfish
Bowl
Spoon
Knife

Directions:

1. In a bowl mix a few drops of food coloring to the softened cream cheese.
2. Spread the blue cream cheese on the melba toast or crackers.
3. Have students add a few goldfish to their “estuary.”

Life on the Outer Banks- Kindergarten Edition
Social Studies Lesson- The Lighthouse and Keepers

The Cape Lookout Lighthouse

Cape Lookout and its shoals (or shallow areas) have long been known as navigational hazards for ships passing by the coast of North Carolina. These shoals have been called the *Horrible Headland* and the North Carolina coast has been nicknamed the *Graveyard of the Atlantic* because of the dangers present to passing ships.

In order to warn sailors to stay away from the dangerous shoals, a lighthouse was built near Cape Lookout in 1812. The lighthouse was a tower within a tower: brick formed the inner tower and the outside was a wooden framed building, boarded and shingled, and painted with red and white horizontal stripes. The tower was 107 feet tall and its light could reach about 12 miles on a clear day. Unfortunately, the Lookout Shoals stretched 14 to 16 miles off shore. Many captains reported they were more likely to run aground looking for the light than to be helped by the lighthouse.

With the need for a taller lighthouse recognized, a new light was built. The new lighthouse was completed on November 1, 1859 with a height of 163 feet. The light from this taller lighthouse could reach up to 18 miles on a good day. It was painted in 1873 with a "diagonal checkerboard" or "diamond" pattern with black and white diamonds. The 1812 lighthouse stood close by for years, its foundational rocks still visible today.

Cape Lookout Lighthouse
(Photo courtesy of Connie Mason)

Lighting the Lighthouse

The first Cape Lookout Lighthouse was lit by many lamps that had separate reflectors and wicks. The keeper had to clean the glass in the tower windows and the lamps and keep the wicks at the right height. If the wicks were not trimmed correctly, the lamps would smoke and dirty the glass. This led to a nickname for the keepers: "Wickies." During bad weather, keepers had to stay in the lighthouse, day and night, all through the storms to make sure the lamps stayed lit to help any ships using the light to keep from wrecking on the shoals. It did not matter how long the storm lasted, one hour or two days; the keepers had to fulfill their service.

The original lighthouse lamps were replaced in the mid-19th century with a brighter-burning hollow-wick lamp and a first order Fresnel (pronounced Fra-nel) lens, which greatly intensified the light, allowing it to burn brighter and farther. In 1912, the lighthouse was equipped with an oil vapor lamp. Mineral oil (kerosene) vapor was contained and burned under pressure to produce a brighter light; much like the mantle in a modern-day camping lantern.

An electric light and generator were installed in 1933. In 1979 the light and Fresnel lens were replaced with two revolving 1,000-watt electric airport beacons which flash every 15 seconds, 24 hours a day, visible up to 18 miles offshore.

Note: Due to the curvature of the Earth, twenty-five nautical miles is the greatest distance any light can be seen at sea.

Lighthouse Quick Facts

- The (current) Cape Lookout Lighthouse was first lit on November 1, 1859.
- There are 216 steps to get from the ground to the lantern room.
- This lighthouse was the first of this style built on the North Carolina coast.
- The "diamond" or "diagonal checker board" painted design of the lighthouse makes this the only lighthouse in North Carolina that shows direction.
  (The white diamonds face west and east and the black diamonds face north and south.)
- This painted design, called a day mark, was painted in 1873. Before that, it was a simple, red brick tower.
- This lighthouse is 163 feet tall.
- The light is 150 feet above sea level.
- The lighthouse tower was transferred from the US Coast Guard to the National Park Service in 2003.

Spotlight: Lighthouse Keepers

The people and families that inhabited the Outer Banks were resilient, self-sufficient, stubborn, independent, spiritual, talented, sensitive, and tough. Their environment, occupations and technological developments (or lack of them) shaped their survival, perceptions, occupations and the traditions they practiced.

Here are a few folks that represent some of the most interesting stories that have come down to us through historical documents and oral histories.

Keeper Charlotte Ann Mason

The first keeper appointed to the Cape Lookout Lighthouse was **James Fulford**. He was stationed at the Cape Lookout lighthouse on June 2, 1812 and maintained the light in the first lighthouse built at Cape Lookout, not the 1859 lighthouse seen today.

Charlotte Ann Mason was the only woman to officially serve as a keeper at the Cape Lookout Lighthouse. She was a Second Assistant Keeper from August 21, 1872 until May 27, 1875 under her father, **George Mason**, who was the Head Keeper.

Two other women in North Carolina officially held keeper positions: Eulalia Simpson was an Assistant Keeper at Hatteras Inlet and Leila P. Simmon was an acting Assistant Keeper at Brant Island. Many other women performed the duties of a keeper with or for their husbands, fathers, brothers, or other relatives, but were never officially appointed.

Isaac Van Willis was one of the last keepers of the Cape Lookout lighthouse—when it was fueled by kerosene and lighted manually.

The **Willis children** lived with their father at the cape until they were 6 years old, when they moved to Harkers Island to attend school. Many children of keepers were homeschooled or lived with their mothers or other relatives on the mainland to attend school there.

Keeper Isaac Van Willis and his wife Almitre Willis

'Neath Lookout Light

An Autumn night on Cape Lookout
The gallery of heaven lights the sky
Delicate, mysterious –
Luring awed intruders such as I.
A silent sentinel stands watch this night
As I lie down to sleep 'neath Lookout Light.
I hear a gentle symphony offshore
Rythmic, melodic –
Rehearsing like a million times before
Perfection long attained, each cadence right
And I am bathed in peace, 'neath Lookout Light.
A solitary sea oat bows and sways
Reverent, majestic –
Obedient to the east wind's fickle ways.
How warm, how intimate the night
As I embrace the world 'neath Lookout Light.
To sleep this night would waste the Master's treasure
Priceless, fragile –
A gift far greater than my heart can measure.
Can I enfold such splendor, such delight?
Must morning come so soon 'neath Lookout Light?

By Eloise Blair, October 20, 1990

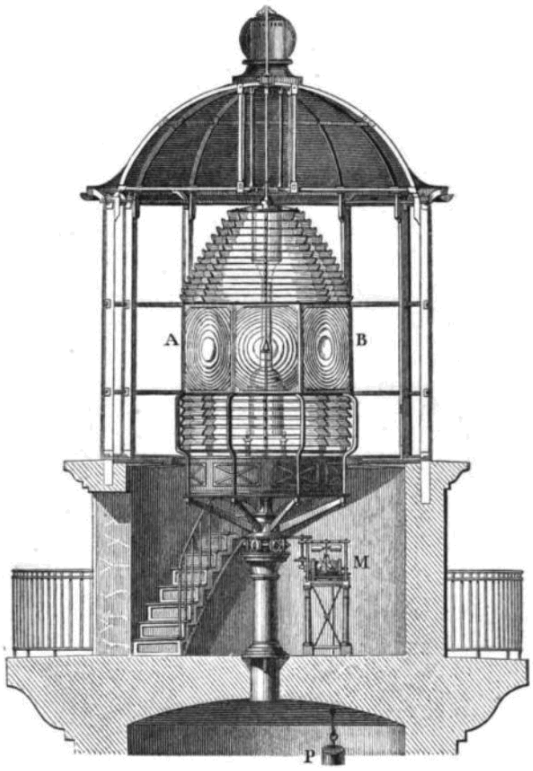
Cape Lookout Painting by Alan Cheek circa 1980

Excerpts from ***Brasswork: The Light-Keepers Lament***
By Frederic W. Morong, Jr.

The lamp in the tower, reflector and shade,
The tools and accessories pass in the parade,
As a matter of fact the whole outfit is made
Of BRASSWORK

The oil containers I polish until
My poor back is broken, aching and still,
Each gallon, each quart, each pint and gill
Is BRASSWORK.
…

I dig, scrub and polish, and work with a might,
And just when I get it all shining and bright,
In comes the fog like a thief in the night,
Goodbye BRASSWORK!



Cross section of the top of a lighthouse: includes the Watch Room (below) and the Lantern Room (above) with a First Order Fresnel lens.

Lighthouse Keeper polishing a First Order Fresnel lens

Frederic W. Morong, Jr. was born in 1883 in Canada and was a lighthouse keeper. Fred often heard the keepers complain about the repetitive and time-consuming chores. Foremost was polishing brass. A keeper would polish his brasswork to the point of perfection. But for various reasons, the shine wouldn't last and the keeper would be compelled to polish this same brass time and time again. The complaining inspired this poem in 1935.

Life on the Outer Banks – Kindergarten Edition

The Lighthouse and Keepers- *Keep the Lights Burning, Abbie*

Pre-Site Visit Social Studies Activity

North Carolina Essential Standards and Clarifying Objectives

K Social Studies

K.E.1: Understand basic economic concepts.

K.E.1.2: Explain how jobs help people meet their needs and wants.

K.C&G.1: Understand the roles of a citizen.

K.C&G.1.2: Explain why citizens obey rules in the classroom, school, home and neighborhood.

K.C.1: Understand how individuals are similar and different.

K.C.1.1: Explain similarities in self and others.

K.C.1.2: Explain the elements of culture (how people speak, how people dress, foods they eat, etc.).

Description:

Students will gain an understanding of characteristics important for lighthouse keepers through the story of 17-year-old Abbie Burgess.

Vocabulary:

Lighthouse Lighthouse Keeper Responsibility Trustworthiness

Materials:

Keep the Lights Burning, Abbie by Peter Roop and Connie Roop

Lighthouse Vocabulary Page

Directions:

1. Have students practice writing the word "lighthouse" using the vocabulary page.
2. Read the book aloud to the class.
3. Use the questions below to discuss Abbie's work and its importance.

Questions:

- Do you think you could have done Abbie's job?
- What would be the hardest part?
- Do we still use candles today?
- How did Abbie demonstrate trustworthiness and responsibility?
- How would you show similar characteristics at home and school?

Vocabulary

Name: _____ Date: _____

lighthouse

lighthouse

lighthouse

lighthouse

lighthouse

Life on the Outer Banks- Kindergarten Edition
The Lighthouse and Keepers- Mapping the Lighthouse Area
On-Site Social Studies Activity

North Carolina Essential Standards and Clarifying Objectives
K Social Studies

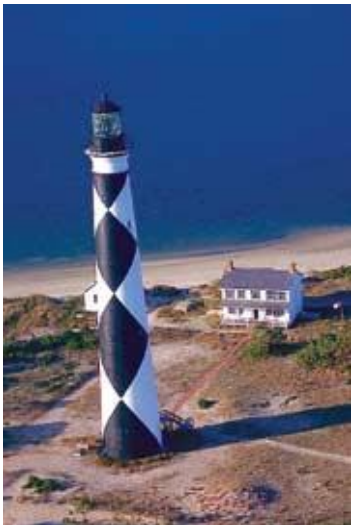
K.G.1: Use geographic representations and terms to describe surroundings.
- K.G.1.1: Use maps to locate places in the classroom, school and home.
- K.G.1.2: Use globes and maps to locate land and water features.
- K.G.1.3: Identify physical features (mountains, hills, rivers, lakes, roads, etc.).
- K.G.1.4: Identify locations in the classroom using positional words (near/far, left/right, above/beneath, etc.).

Description:
Students will observe the lighthouse and the Keepers Quarters in order to understand the importance of the lighthouse for the safety of mariners.

Vocabulary:

Lighthouse	Lighthouse Keeper	Ocean	Sound
Compass	North	South	

Materials:
Maps (drawing of Cape Lookout area)
Compasses
Pen or pencil


Cape Lookout Lighthouse and Keepers Quarters

Directions:
1. On the boat ride to the lighthouse, ask the students to look for the lighthouse.
    a. Is it easy to see?
    b. What do they see? What colors?
2. Upon arriving at Cape Lookout, students should visit the lighthouse. Make sure they walk all the way around the base.
    a. Have the students mark the location of the lighthouse on their map.
3. Have the students count the black diamonds (officially called “diagonal checkers”) and the white diamonds.
4. Have students, taking turns, stand with their backs to the lighthouse in the center of one of the black diamonds.
5. Students should hold the compass flat on the palm of their hand in front of their belly button.
6. They should rotate the compass until the needle line-up with the “N” on the compass.
7. Instruct the students that south is the complete opposite of north.

Questions:

- Which way is north? (Have students point north.)
- Which way do the black diamonds face?
- If you were North or South of the lighthouse on a boat, would you see more black diamonds or more white diamonds?

Alternative 1:

1. Observe the lighthouse using the spotting scope at the Cape Lookout National Seashore Visitor Center on Harkers Island, NC.
2. Have students count the number of seconds between the flashes of light from the lighthouse.
3. Students should also count the number of black and white diamonds that can be seen using the spotting scope.
4. Have students mark the lighthouse on their map.

Note: Students will have to take turns using the spotting scope. The class can be split into groups and some groups can explore the Discovery Room or watch the park film while they wait.

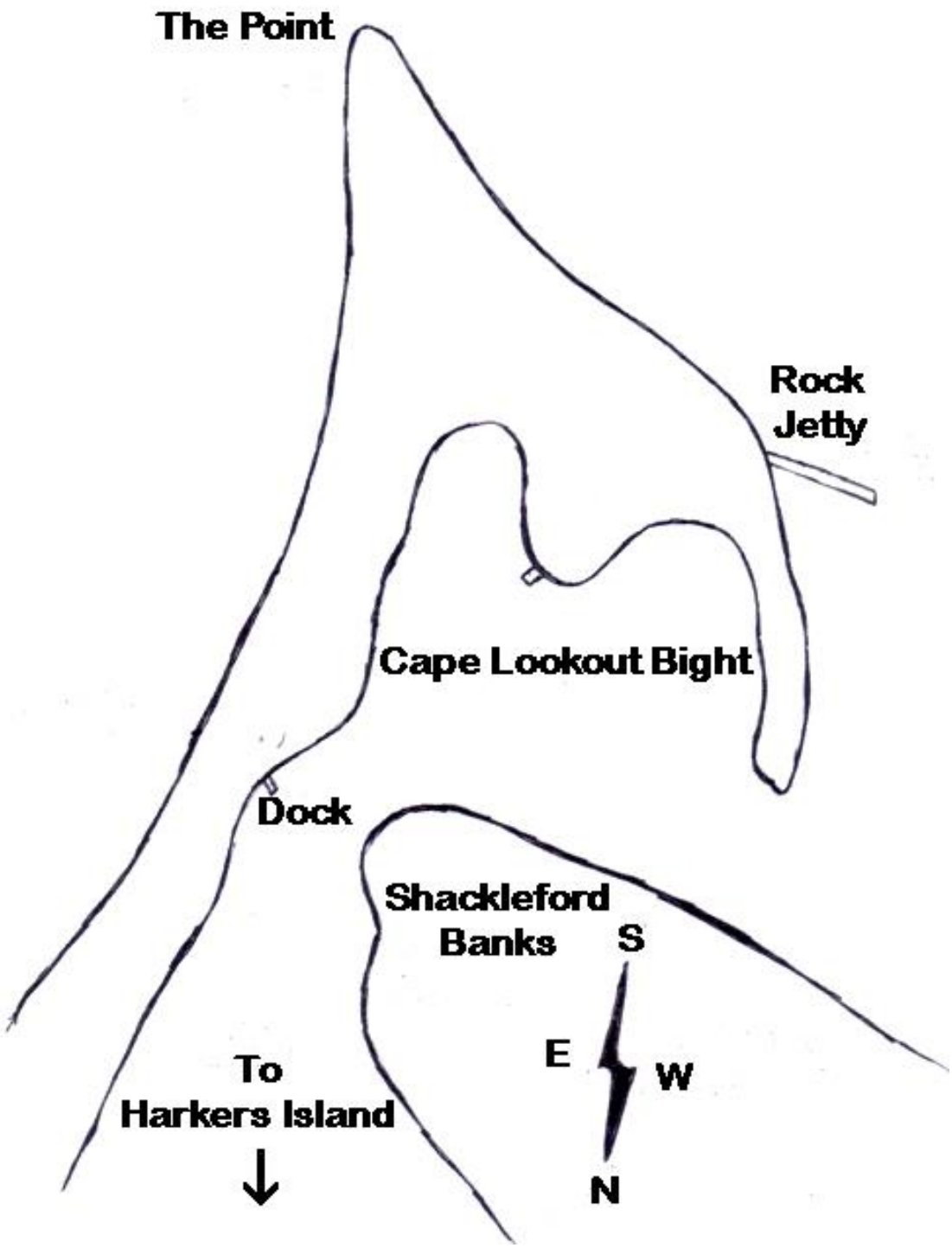
Alternative 2:

1. Attend a scheduled program on lighthouse keepers or the history of the Cape Lookout Lighthouse.
2. To request a special program, call 252-728-2250.
3. Request that the person giving the program tell the class about how the lighthouse was lit when it was first built, how it is lit today, what it would be like to live as a lighthouse keeper, and how the keepers and their families got food, mail, etc.
4. Have each of the students ask a question about the lighthouse or its keepers.
5. Have students mark the lighthouse on their map.
6. Ask students to draw an arrow to the area where the mail and groceries for keepers would come from.
    a. This will be just off the map's edges toward Harkers Island.

Volunteers in Keeper and Wife costumes

Area Surrounding the Cape Lookout Lighthouse

Name: _____ Date: _____



Life on the Outer Banks- Kindergarten Edition

The Lighthouse and Keepers- Designing a Lighthouse

On-Site Social Studies Activity

North Carolina Essential Standards and Clarifying Objectives

K Social Studies

K.H.1: Understand change over time.
K.H.1.1: Explain how people change over time (self and others).
K.E.1: Understand basic economic concepts.
K.E.1.2: Explain how jobs help people meet their needs and wants.
K.C.1: Understand how individuals are similar and different.
K.C.1.1: Explain similarities in self and others.
K.C.1.2: Explain the elements of culture (how people speak, how people dress, foods they eat, etc.).

Description:

Students will review their visit to the Cape Lookout Lighthouse and will explain how the lighthouse is designed to attract attention and warn ships of dangerous shallow water.

Vocabulary:

Lighthouse Lighthouse Keeper Shipwreck

Materials:

Shipwreck Vocabulary Page
Cape Lookout Lighthouse coloring page
Crayons
Flashlight
Pictures of North Carolina's lighthouses
Lighthouse outline coloring page

Directions:

1. Discuss the lighthouse and its importance with the students.
    a. Discuss the placement of the diamonds and the visibility of the lighthouse from far away.
    b. Talk about ships that would use the diamonds and light to not only figure out where they were, but also to avoid getting their boats stuck in shallow, dangerous water.
        i. Have students practice writing the word "shipwreck" using the vocabulary page.
    c. Speak about the second function of the light: to locate Cape Lookout's safe harbor or bight.
2. Have students color the picture of the Cape Lookout Lighthouse, making sure to include the black diamonds and white diamonds that they counted on their field trip.
3. Students should role play the lighthouse light using a flash light by counting 15 seconds off and then flashing the light on.
    a. Try it with some of the lights out for a brighter effect.

4. Show the class pictures (included in the Bright Ideas section) of four of North Carolina's other coastal lights.
    a. How are the lighthouses different? How are they similar?
    b. How does the color pattern help prevent shipwrecks?
5. Have the students decorate their own lighthouse.
    a. It should stand out for anyone passing nearby.

Follow-Up:

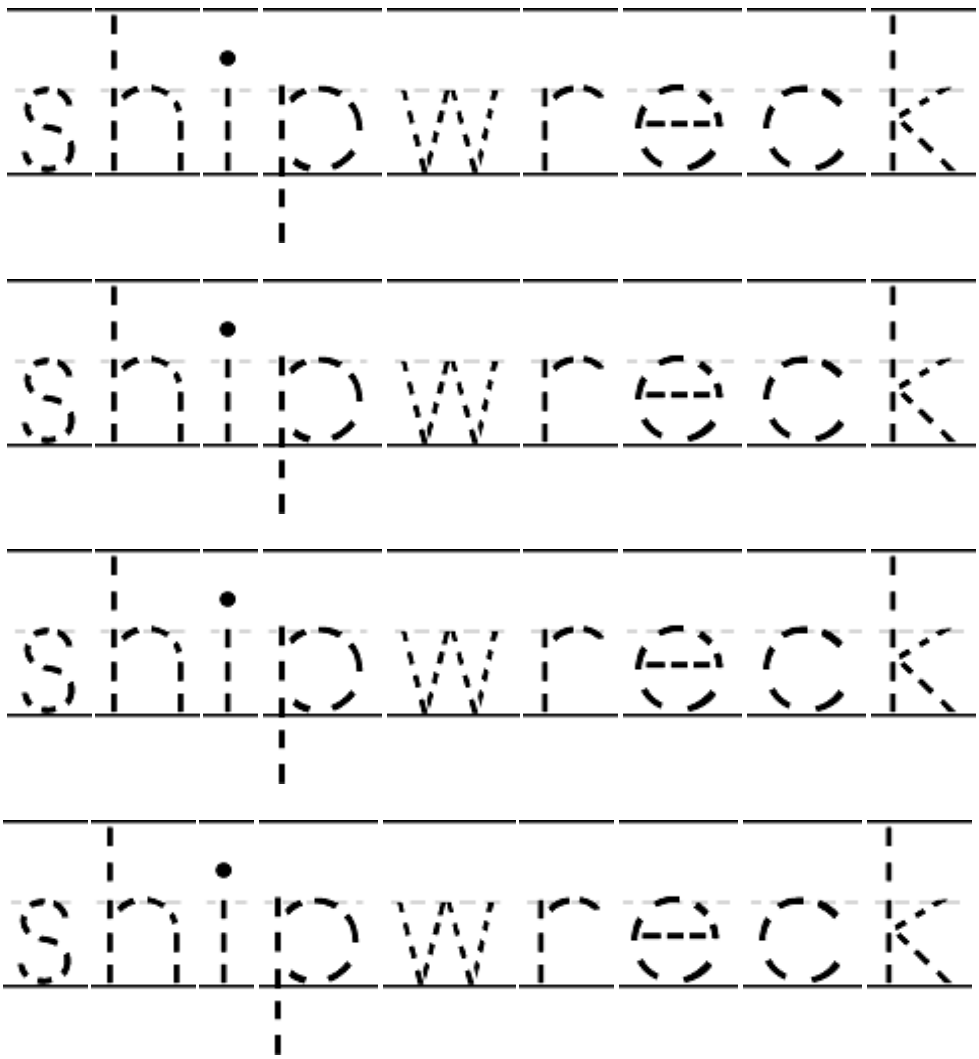
- The Cape Lookout Lighthouse is 163 feet tall and has 216 steps to the top.
    - Have students count off 216 steps or 163 feet on the playground.
- Ask them how difficult it would be if they were Abbie.
    - Remember, she had to walk up and down the lighthouse steps to keep the candles lit so passing boats could see the lights and not run aground.
- Do we need lighthouse keepers today? Why or why not?

Cape Lookout Light Station c. 1940
Barden Inlet and Shackleford Banks in the background

Vocabulary

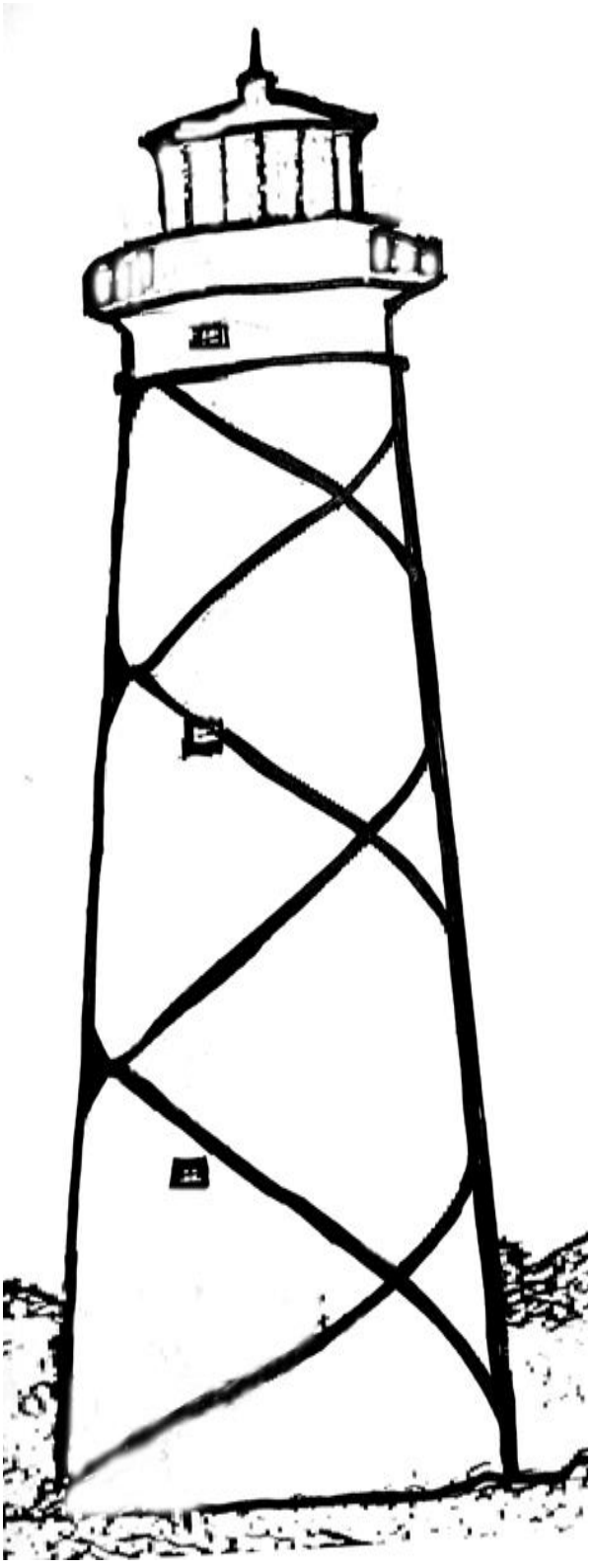
Name: _____ Date: _____

shipwreck



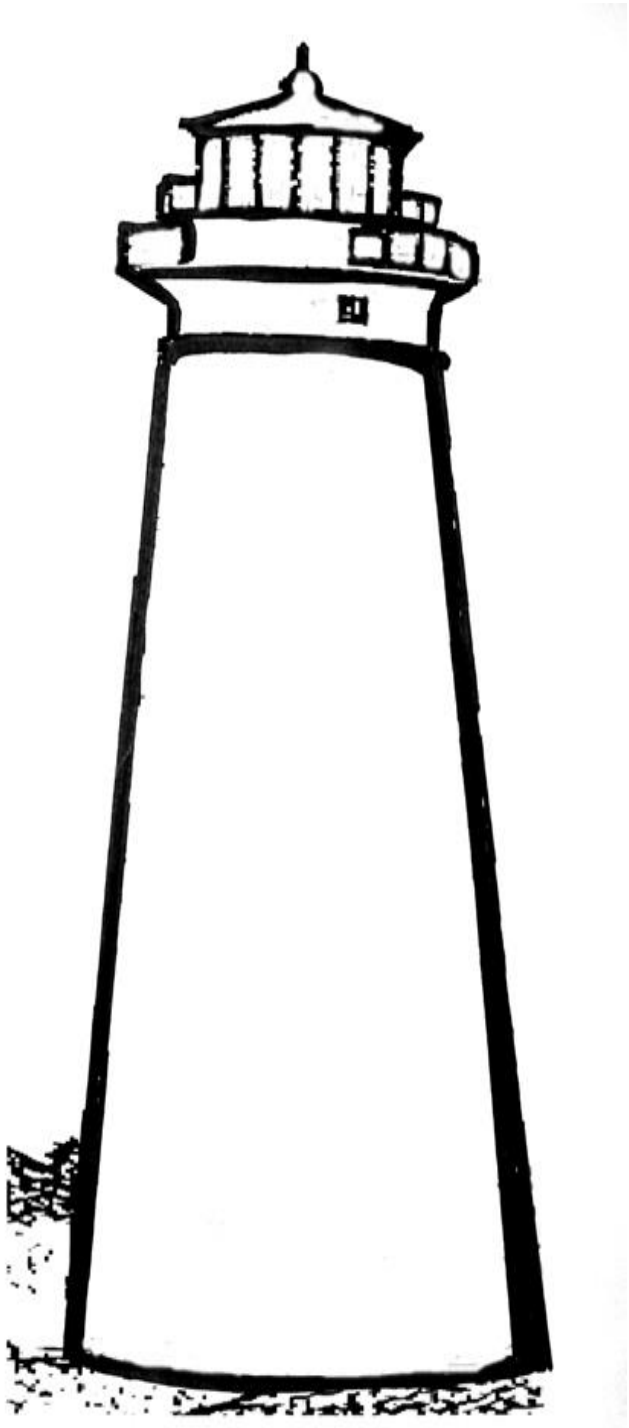
Cape Lookout Lighthouse Coloring Page

Name: _____ Date: _____

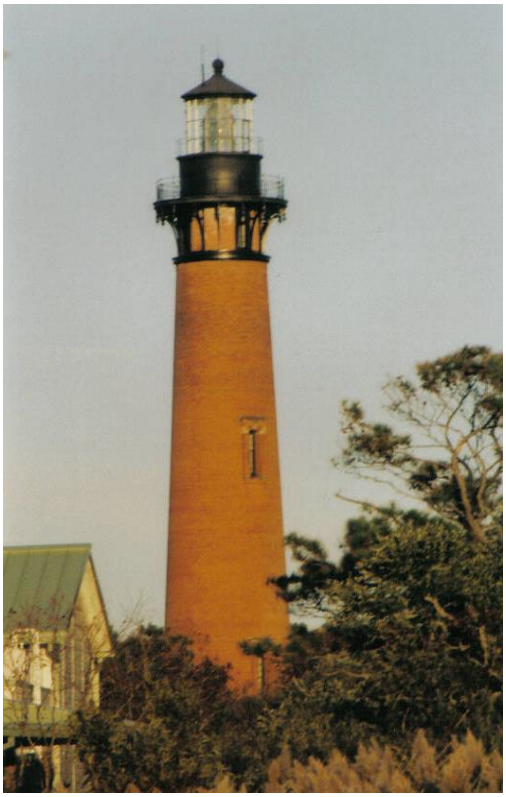


Design Your Own Lighthouse Coloring Page

Name: _____ Date: _____



Bodie Island



Currituck

Hatteras

Ocracoke

Life on the Outer Banks- Kindergarten Edition
Social Studies Lesson
The Cape Lookout Life-Saving Station

When a ship could not be saved by the warning light of the lighthouse and it wrecked on the shoals of Cape Lookout, the crew aboard the ship relied on the help of the U.S. Life-Saving Service to save them and get them safely to shore.

Wrecks happened along Core Banks so often that three lifesaving stations were built on it: the Cape Lookout Station was built on the south end, about two miles south of the lighthouse (1888); the Core Banks Station was built halfway up the island; and the Portsmouth Station was built on the north end of the island at Portsmouth Village. (In the past, North Core Banks and South Core Banks were connected, forming one long island.)

The crews were busy around the clock with beach patrols, lookout duty, and rescue drills. They practiced their rescue drills five days a week and, on Saturdays, they had to clean the station.

One of the most famous wreck rescues at the station Cape Lookout Station was the wreck of the ship *Sarah D.J. Rawson* in 1905. This vessel was loaded with lumber and wrecked on the outer shoals, a couple of miles out in the ocean. When the wreck was discovered, the station keeper and his entire crew were sick with the flu, but they had to do their duty, so they manned the life boat and rowed the two miles out in the stormy ocean.

When they arrived, so much debris, rope, and lumber were thrashing about in the raging ocean that they could not get close to the wreck. So they stayed in their small boat and kept within sight of the helpless crew to give them hope that they had come to rescue them. They stayed there over 24 hours waiting for the ocean to calm so they could get to the crew.

Eventually, the storm died down and they rescued six of the seven-man crew. One man had been swept overboard before the lifesavers arrived. For this courageous and selfless rescue, Keeper Gaskill and his crew received the Life-Saving Service's highest award, the Gold Medal of Honor.

The Life-Saving Service was eventually combined with the Revenue Cutter Service to form the U.S. Coast Guard.

<u>Rescuers of the *Sarah D.J. Rawson*</u>

Keeper William H. Gaskill
Surfman Kilby Guthrie
Surfman Walter M. Yeomans
Surfman Tyre Moore
Surfman John A. Gutherie
Surfman James W. Fulcher
Surfman John H. Kirkman
Surfman Calupt T. Jarvis
Surfman Joseph L. Lewis

A Life-Saver

He's a rigger, rower, swimmer, sailor, undertaker,
And he's good at every one of 'em the same,
And he risks his life for others in the quicksands and the breakers.
And a thousand wives and mothers bless his name.
He's an angel dressed in oilskins, he's a saint in a "sou'wester,"
He's as plucky as they make, or ever can.
He's a hero born and bred, but it hasn't swelled his head,
And he's jest the U.S. Government's hired man.

By Joe Lincoln, Cape Cod native
Source: National Park Service U.S. Department of the Interior

A breeches buoy suspended on a pulley system was used to transport shipwreck victims from the crashing waves to the safety of the shore.

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